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10/697,537

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David M. Skinlo

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MARY ELIZABETH BUSH  
QUALLION LLC  
P.O. BOX 923127  
SYLMAR, CA 91392-3127

EXAMINER

ECHELMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1745

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/697,537

Applicant(s)

SKINLO ET AL.

Examiner

Alix Elizabeth Echelmeyer

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27,34-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 and 34-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No: \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to the amendment filed March 13, 2007. Claims 8, 10 and 21 have been amended. Claims 28-33 and 39-53 were cancelled in a previous amendment. Claims 1-27 and 34-38 are pending and are rejected for the reasons given below.

### ***Claim Objections***

2. The objections to claims 8, 10 and 21 in the Office Action of December 20, 2006 are withdrawn in light of the amendments.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Hercamp et al. (US Patent 6,001,503).

Hercamp et al. teach a microporous battery separator that is sealed along two edges by a method such as heat sealing, ultrasonic welding, or pressure welding (abstract, column 2 lines 45-51). The bottom seal is a fold in the separator. An electrode plate is placed within the pocket created by the separator (column 1 lines 54-60). As

seen in Figure 1, the electrode contained within the separator pocket includes a tab, (16).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al.

The teachings of Hercamp et al. as discussed above are incorporated herein.

Hercamp et al. teaches the separator pocket for enclosing an electrode to reduce the possibility of interplate shorting (column 1 lines 30-34) but fail to teach seams on four sides of the pocket.

It would be desirable to make seams on four sides of the separator to reduce the possibility of shorting if the battery was to be used in an application where it might be turned upside down, which might cause the electrodes to slip out of the pocket along the side where there is no seam.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make a seam on the fourth side of the pocket to ensure against the possibility of shorting of the battery.

7. Claims 1-3, 5-13, 16-18, 20-22 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. (US Patent 4,476,203).

The teachings of Hercamp et al. as discussed above are incorporated herein.

Regarding claims 1 and 34, Hercamp et al. teach a gap between the seams, allowing for the electrode to be placed in the pocket (Figure 2). As for these claims, as well as 16, Hercamp et al. fail to teach a spacer.

Robert et al. teach a battery cell where the positive electrode is contained within separator elements. The separator materials are larger in surface area than the electrode plates (abstract). Robert et al. teach a line or cord of epoxy resin sealing the separator elements around the outside of the electrode plate to prevent active material from escaping (column 2 lines 3-13).

As seen in Figures 3a and 3b of Robert et al., the epoxy resin serves as sealant as well as spacer, since it is poured into the channel between the portions of the separators that extend beyond the electrode plate (abstract).

It would be advantageous to create the seal of Robert et al. in the separator of Hercamp et al. since the resin can be formed within the space already created by the electrode plate being placed between the two separator sheets, the need for extra machinery to create the seal is removed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the epoxy seal of Robert et al. in the battery of Hercamp et al. in order to facilitate the formation of the seal.

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As for claims 2, 17 and 35, Robert et al. is silent on the size of the epoxy resin ribbon. However, Hercamp et al. teach that the separator about 0.006 to 0.015 inches thick. If the spacer of Robert et al. was used in the separator pocket of Hercamp et al., and the epoxy spacer was of the same thickness as the electrode, as seen in Robert et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the spacer of a thickness greater than 10  $\mu\text{m}$ .

Regarding claims 10 and 21, Hercamp et al. teach the seam except for the length extending along the side of the pocket. It would have been an obvious matter of design choice to change the length of the seam, for example to facilitate production, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV).

Claims 12 and 13 are to the thickness of the spacer in relation to the thickness of the electrode. As seen in Figures 3a and 3b of Robert et al., the spacer has the same thickness as the electrode.

Regarding claims 3, 18 and 26, Robert et al. teach that the epoxy serves as an adhesive to bond the separators (abstract).

With regard to claims 5, 6, 7, Hercamp et al. teach that the pocket of the separator is formed by folding the separator in half and bonding the sides perpendicular to the fold (see above).

As for claim 8, the spacer of Robert et al. forms a seam along the edges of the separator.

Claims 9 and 20 are to the separator made from polypropylene or polyethylene. Hercamp et al. teach that the separator as made of polyethylene (column 1 lines 12-17).

With regard to claims 11, 22 and 38, Hercamp et al. teach a tab on the electrode, with the tab extending outside the separator pocket. It would have been an obvious matter of design choice to put a hole in the tab, perhaps for alignment purposes, since such a modification would have involved a mere change in the shape of the component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B).

As for claims 36 and 37, Hercamp et al. teach forming the seams after the electrode is positioned within the separator (column 2 lines 45-51, Figure 2).

8. Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Robert et al. as applied to claims 3 and 18 above, and in further view of Crabtree (US Patent 4,539,271).

The teachings of Hercamp et al. and Robert et al. as discussed above are incorporated herein.

Hercamp et al. and Robert et al. teach an epoxy adhesive to seal the edges of a pocket separator but fail to teach the use of an acrylic adhesive.

Crabtree teaches the use of an adhesive such as epoxy or acrylic to seal the edges of a pocket separator. The adhesive is selected to ensure that the seams will not fall apart during assembly or in the cell environment (abstract, column 4 lines 18-33).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the seam of Hercamp et al. in view of Robert et al. out of acrylic if acrylic was determined to be more likely to ensure that the seams would not fall apart during assembly or in the cell environment.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Cheu (US Patent 5,674,641).

The teachings of Hercamp et al. as discussed above are incorporated herein.

Hercamp et al. teaches the separator pocket for enclosing an electrode to reduce the possibility of interplate shorting (column 1 lines 30-34) but fail to teach a tab opening extending through the tab and being open to an edge of the tab.

Cheu teaches a battery module containing a series of batteries having electrode tabs (abstract; Figure 3). The tabs contain holes that can be used for alignment, or to attach shafts or fastening means to form a stack (column 7 lines 35-50; column 8 lines 15-28).

Cheu teaches tab openings but does not teach that the tab openings are open to the edge of the tab. It would have been an obvious matter of design choice to form the tab openings to be open to an edge of the tab, since such a modification would have facilitated the placement of a shaft or fastening mechanism in the tab openings, such as by allowing the assembler to slide a shaft into the holes from the side instead of from the top down. Such a modification would have involved a mere change in the shape of a



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component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B).

It would have been advantageous to make tab openings in the tabs of Hercamp et al. as taught by Cheu in order to facilitate assembly by providing a tool to align the tabs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make tab openings in the tabs of Hercamp et al. as taught by Cheu in order to facilitate assembly by providing a tool to align the tabs.

10. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hercamp et al. in view of Cheu as applied to claim 23 above, and further in view of Robert et al.

The teachings of Hercamp et al., Cheu and Robert et al. as discussed above are incorporated herein.

Hercamp et al. in view of Cheu teach an electrode in a bag with a tab, having a tap opening, extending from the bag. Hercamp et al. in view of Cheu fail to teach a spacer.

Robert et al. teach a battery cell where the positive electrode is contained within separator elements. The separator materials are larger in surface area than the electrode plates (abstract). Robert et al. teach a line or cord of epoxy resin sealing the

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separator elements around the outside of the electrode plate to prevent active material from escaping (column 2 lines 3-13).

As seen in Figures 3a and 3b of Robert et al., the epoxy resin serves as sealant as well as spacer, since it is poured into the channel between the portions of the separators that extend beyond the electrode plate (abstract).

As for claim 25, Robert et al. is silent on the size of the epoxy resin ribbon. However, Hercamp et al. teach that the separator about 0.006 to 0.015 inches thick. If the spacer of Robert et al. was used in the separator pocket of Hercamp et al., and the epoxy spacer was of the same thickness as the electrode, as seen in Robert et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the spacer of a thickness greater than 10  $\mu\text{m}$ .

Regarding claim 27, Hercamp et al. teach the seam except for the length extending along the side of the pocket. It would have been an obvious matter of design choice to change the length of the seam, for example to facilitate production, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV).

Regarding claim 26, Robert et al. teach that the epoxy serves as an adhesive to bond the separators (abstract).

It would be advantageous to create the seal of Robert et al. in the separator of Hercamp et al. since the resin can be formed within the space already created by the

electrode plate being placed between the two separator sheets, the need for extra machinery to create the seal is removed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the epoxy seal of Robert et al. in the battery of Hercamp et al. in view of Cheu in order to facilitate the formation of the seal.

### ***Response to Arguments***

11. Applicant's arguments filed March 13, 2007 concerning claims 1, 14 and 34 have been fully considered but they are not persuasive. Applicants argue that the electrode plates of Hercamp et al. are not associated with an escaping active material. This argument does not convincingly show that the instantly claimed invention overcomes Hercamp et al. because the invention as claimed does not state that the seams at the perimeter of the pocket must prevent escaping active material. Additionally, the active material of Hercamp et al. is contained within the electrode pocket; therefore it does not escape. In fact, if the electrode active material of Hercamp et al. was escaping, then the battery would not function.

In the paragraph on page of the Remarks beginning, "Additionally, Roberts reports ...", Applicants argue that the corrugated border of Hercamp et al. does not surround the electrode. The examiner disagrees. The instant invention is drawn to an electrode contained within a pocket, with seams on the perimeter of the pocket or bag. It would be well known to one having ordinary skill in the art that a pocket or a bag would function as intended with seams on three of four sides. For example, if a shirt pocket

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had seams on two sides and the bottom, it would be capable of holding things, such as pens, without the pens escaping. It would also have been well known to one having ordinary skill in the art that, if it was desirable to have the pens contained permanently within the pocket, a seam on the top, or fourth side, could be made.

12. Applicant's arguments, see page 9 of the Remarks, filed March 13, 2007, with respect to the rejection of claim 23 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Cheu (see above).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

aee

  
SUSYTSANG-FOSTER  
PRIMARY EXAMINER